GLOBAL CHANGE AND MEDITERRANEAN PINES: ALTERNATIVES FOR MANAGEMENT

IUFRO
DIVISION 1: Unit 1.01.10 – Ecology and silviculture of pine
DIVISION 2: Unit 2.02.13 – Breeding and genetic resources of Mediterranean conifers
DIVISION 4: Unit 4.01.00 – Forest mensuration and modelling
Joint International Meeting

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Carbon Stocks in Portuguese Maritime Pine Stands

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One of the Pan-European Criteria for the Sustainable Forest Management is the Maintenance and Appropriate Enhancement of Forest Resources and their Contribution to Global Carbon Cycles. Carbon dioxide (CO2) is the most important anthropogenic greenhouse gas. Its annual emissions increased by about 80% between 1970 and 2004 according to the 2007 report from IPCC, being the main responsible for the changes in the world climate. Today, the carbon sequestration is among the most important services that are expected from the forests. Growth and yield models should be able to predict carbon stocks in forests from National Forest Inventory data. Carbon pools in a forest ecosystem are generally partitioned into live trees, understorey vegetation, forest floor litter, coarse woody debris, and soil. A study was recently carried out in three regions from the distribution area of maritime pine (*Pinus pinaster* Ait.) in Portugal, aiming to quantify the carbon stocks in the understorey, forest floor, dead wood and soil. A total of thirty 500 m2 plots (10 in each region) were established. In each sampling place, the distance to the plot centre and the azimuth of all trees were registered. Dendrometrical and qualitative variables were also taken. A 1x1 m plot was used to sample understorey vegetation. Forest floor (L and F+H layers) was sampled using a quadrat of 50x50 cm. Concerning the dead wood, snags were measured for dbh and total height when they were present in the plot area. Logs were sampled by the line interception method, using 4 transepts of 25 metres in the directions N-S, E-W, NW-SE and NE-SW, passing through the plot centre. Both for logs and snags 3 decomposition classes were considered. Mineral soil was collected from the depths 0-10 cm, 10-30 cm and 30-60 cm. This data is being analysed and hopefully will be incorporated in a growth and yield model in order to predict carbon stocks in different forest management scenarios which is important for the equilibrium between timber production and carbon sequestration.

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